FORM PTO-1390 (REV. 5-93) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER: VO-564

U.S. APPLICATION NO. (If known, see 37 C.F.R. 1.5): 10/088392

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/EP00/08043	17 August 2000	17 September 1999

TITLE OF INVENTION

METHOD FOR THE PRODUCTION OF PRINTED SURFACES

APPLICANT(S) FOR DO/EO/US

Ingo BECKMANN et al.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ■ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND OR SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ■ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ■ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ■ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
   a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
   b. ■ has been transmitted by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ■ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ■ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
   a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☐ have been transmitted by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ■ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ■ A FIRST preliminary amendment. (8 pages)
    ☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ■ A substitute specification. (attached to a red-ink marked-up version of the English language translation)
15. ☐ A change of power of attorney and/or address letter.
16. ■ Other items or information:

- Form PCT/IB/301
- Form PCT/IB/304
- Form PCT/IB/308
- Form PCT/ISA/210 (English language version, 3 pages)
- Transmittal of Substitute Specification
- Certificate of Mailing by Express Mail (2 pages)
- Return Receipt Postcard

EXPRESS MAIL NO.: EL859245022US

MAILED: 18 March 2002

P202.1/ jms

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)	INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER
10/088392	PCT/EP00/08043	VO-564

17. ■ The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)):	CALCULATIONS PTO USE ONLY
Search Report has been prepared by the EPO or JPO . . . . . $ 890.00	
International preliminary examination fee paid to USPTO (37 CFR 1.482) . . . . . $ 710.00	
No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) . . . . . $ 740.00	
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO . . . . . $ 1,040.00	
International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) . . . . . $ 100.00	

ENTER APPROPRIATE BASIC FEE AMOUNT =	$ 890.00	
Surcharge of **$130.00** for furnishing the oath or declaration later than ❑ 20 ❑ 30 months from the earliest claimed priority date (37 CFR 1.492(e)).		

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	6 * - 20 =	0	X $18.00	$	
Independent claims	1 - 03 =	0	X $84.00	$	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ $280.00		

TOTAL OF ABOVE CALCULATIONS =	$ 890.00	
Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28).		
SUBTOTAL =	$ 890.00	
Processing fee of **$130.00** for furnishing the English translation later than ❑ 20 ❑ 30 months from the earliest claimed priority date (37 CFR 1.492(f)). +		
TOTAL NATIONAL FEE =	$ 890.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). **$40.00** per property +		
TOTAL FEES ENCLOSED =	$ 890.00	
* Based upon entry of the First Preliminary Amendment.	Amount to be: refunded	$
	charged	$

a. ■ A check in the amount of $ 890.00 to cover the above fee is enclosed.

b. ❑ Please charge my Deposit Account No. _____ in the amount of $_____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ■ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 19-3550 . A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SIGNATURE

Douglas H. Pauley

NAME

33,295

REGISTRATION NUMBER

SEND ALL CORRESPONDENCE TO:

Pauley Petersen Kinne & Erickson
2800 West Higgins Road, Suite 365
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(847) 490-1400
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VERIFIED STATEMENT CLAIMING SMALL ENTITY STATUS (37 CFR 1.27(a)(1))-INDEPENDENT INVENTOR (A PERSON)	Docket Number VO-564

Applicant or Patentee: Ingo BECKMANN et al.

Serial or Patent No.: _____

Filed or Issued: _____

Title: METHOD FOR THE PRODUCTION OF PRINTED SURFACES

As a below named inventor, I hereby declare that I qualify as an independent inventor (a person) as defined in 37 CFR 1.27(a)(1), for purposes of paying reduced fees to the United States Patent and Trademark Office, with regard to the invention described in:

- ■ the specification filed herewith with title as listed above.
- ❑ the application identified above.
- ❑ the patent identified above.

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who would not qualify as an independent inventor under 37 CFR 1.27(a)(1) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.27(a)(2) or a nonprofit organization under 37 CFR 1.27(a)(3).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ■ no such person, concern or organization exists.
- ❑ each such person, concern or organization is listed below.

Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.27(g)(2))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Ingo BECKMANN	Jan KAMP	Stephan MEUTER
NAME OF INVENTOR	NAME OF INVENTOR	NAME OF INVENTOR
X _____	X _____	X _____
Signature of Inventor	Signature of Inventor	Signature of Inventor
X 14.03.2002	X 14.03.2002	X 11.03.02
Date	Date	Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Ingo BECKMANN
Jan KAMP
Stephan MEUTER

Title: METHOD FOR THE PRODUCTION OF PRINTED SURFACES

Based Upon: PCT/EP00/08043

Express Mail No.: EL859245022US

Date of Deposit: 18 March 2002

FIRST PRELIMINARY AMENDMENT

Box PCT
Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Please amend the subject Patent Application as follows to place this Patent Application in better condition for examination:

In the Claims, substitute the following Claims 1-6 (Amended) for the pending Claims 1-6.

1. (Amended) In a method for producing printed surfaces which fluoresce under an ultraviolet illumination by using print colors and/or paints with pigments which are non-visible in normal light and are visible in an ultraviolet light,

Based Upon: PCT/EP00/08043

the improvement comprising:

in a color printing method in which fluorescent pigments of print colors yellow, blue (cyan) and red (magenta) and special color tones, setting a defined ratio to the non-fluorescent pigments of the print colors.

2. (Amended) In the method according to claim 1, wherein to the print colors and/or paints organic pigments are added in a first range of 15% to 20%, fluorescent pigments are added in a second range of 5% to 30%, and optically active substances are added in a third range of 0% in one kilogram of color.

3. (Amended) In the method according to claim 1, wherein to the print colors, organic pigments are added in a first range of 5% to 15%, fluorescent pigments are added in a second range of 10% to 50%, and optically active substances are added in a third range of 0.1% to 0.5% in one kilogram of color.

4. (Amended) In the method according to claim 1, wherein to the print colors and/or paints organic pigments are added in a first range of 0.5% to 5%, fluorescent pigments are added in a second range of 15% to 80%, and optically active substances are added in a third range of 0.5% to 1% in one kilogram of color.

Based Upon: PCT/EP00/08043

5. (Amended) In the method according to claim 1, wherein to the print colors and/or paints organic pigments are added in a first range of 0.5% to 3%, fluorescent pigments are added in a second range of 20% to 85%, and optically active substances are added in a third range of 1% to 2% in one kilogram of color.

6. (Amended) In the method according to claim 1, wherein to the print colors and/or paints organic pigments are added in a first range of 0.5% to 1%, fluorescent pigments are added in a second range of 25% to 90%, and optically active substances are added in a third range of 2% to 5% in one kilogram of color.

On a separate page, please add the following: **ABSTRACT OF THE DISCLOSURE**.

Based Upon: PCT/EP00/08043

ABSTRACT OF THE DISCLOSURE

A method for the production of printed surfaces which are fluorescent under ultraviolet (UV) light uses either a single color or four-color print process in which the base colors of yellow, blue and red and special color tones contain fluorescent pigments, which are not visible under normal light but visible under UV light, in a fixed ratio to the pigments which are colorfast under high intensity light. The method of this invention can be carried out easily to apply and the numerous printing steps previously required are avoided. One advantage is that pictures printed with fluorescent colors appear to give a complete three-dimensional effect at night under UV light with an authentic stepless color reproduction of all tones when compared to the daylight effect.

Based Upon: PCT/EP00/08043

REMARKS

Applicants respectfully request entry of the above Preliminary Amendment to place this Patent Application in better form for examination and prosecution before the U.S. Patent and Trademark Office.

The claims have been amended to more definitely and fully claim the subject matter of Applicants' invention. Applicants urge that the above Preliminary Amendment introduces no new matter into this Patent Application.

Applicants sincerely believe that this Patent Application is now in condition for examination and prosecution before the U.S. Patent and Trademark Office.

Respectfully submitted,

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Regis. No. 33,295

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Based Upon: PCT/EP00/08043

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

1. (Amended) [Method] In a method for producing printed surfaces which fluoresce under an ultraviolet [UV] illumination by using print [colours] colors and/or paints with pigments which are non-visible in normal light and are visible in [UV] an ultraviolet light,

[characterised by] the improvement comprising:

in a color [conventional one or four colour printing, preferably four colour] printing method[,] in which [the] fluorescent pigments of [the] print colors [colours, in particular] yellow, blue (cyan) and red (magenta) and special [colour] color tones [are at], setting a defined ratio to the non-fluorescent pigments of the print [colours] colors.

2. (Amended) [Method] In the method according to claim 1, wherein

[characterised in that

organic pigments are added] to the print [colours] colors and/or paints organic pigments are added in a first [the] range of 15% to 20%, fluorescent pigments are added in [the] a second range of 5% to 30%, and optically active substances are added in a third [the] range of 0% in one kilogram of [colour] color.

Based Upon: PCT/EP00/08043

3. (Amended) [Method] In the method according to claim 1, wherein

[characterised in that,

in] to the print [colours] colors, organic pigments are added in [the] a first range of 5% to 15%, fluorescent pigments are added in [the] a second range of 10% to 50%, and optically active substances are added in [the] a third range of 0.1% to 0.5% in one kilogram of [colour] color.

4. (Amended) [Method] In the method according to claim 1, wherein

[characterised in that

organic pigments are added] to the print [colours] colors and/or paints organic pigments are added in a first [the] range of 0.5% to 5%, fluorescent pigments are added in [the] a second range of 15% to 80%, and optically active substances are added in [the] a third range of 0.5% to 1% in one kilogram of [colour] color.

Based Upon: PCT/EP00/08043

5. (Amended) [Method] In the method according to claim 1, wherein

[characterised in that

organic pigments are added] to the print [colours] colors and/or paints organic pigments are added in a first [the] range of 0.5% to 3%, fluorescent pigments are added in [the] a second range of 20% to 85%, and optically active substances are added in [the] a third range of 1% to 2% in one kilogram of [colour] color.

6. (Amended) [Method] In the method according to claim 1, wherein

[characterised in that

organic pigments are added] to the print [colours] colors and/or paints organic pigments are added in a first [the] range of 0.5% to 1%, fluorescent pigments are added in [the] a second range of 25% to 90%, and optically active substances are added in [the] a third range of 2% to 5% in one kilogram of [colour] color.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Ingo BECKMANN
Jan KAMP
Stephan MEUTER

Title: METHOD FOR THE PRODUCTION OF PRINTED SURFACES

Based Upon: PCT/EP00/08043

Express Mail No.: EL859245022US

Date of Deposit: 18 March 2002

TRANSMITTAL OF SUBSTITUTE SPECIFICATION

Box PCT
Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Applicants have enclosed a Substitute Specification attached to a red ink marked-up copy of the verified English language translation of PCT International Application PCT/EP00/08043. The red ink identifies changes to the verified English language translation which are incorporated in the Substitute Specification.

The Substitute Specification includes general revisions to correct idiomatic translational errors and to provide proper headings. The undersigned states that the Substitute Specification contains no new matter.

Based Upon: PCT/EP00/08043

Applicants sincerely believe that this Patent Application is now in condition for prosecution before the U.S. Patent and Trademark Office.

Respectfully submitted,

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Based Upon: PCT/EP00/08043

SUBSTITUTE SPECIFICATION

METHOD FOR PRODUCING PRINTED SURFACES

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to a method for producing printed surfaces which fluoresce under ultraviolet (UV) light.

Description of Related Art

It is known to use fluorescent dyestuffs in combination with normal dyestuffs for various effects.

Fluorescent dyestuffs are mixed with normal dyestuffs to make the color brighter in daylight. The dyestuffs which are non-visible or fluoresce under ultraviolet light (UV light) are also particularly used in the theatre for special effects, their dramatically fluorescent properties under UV illumination being exploited.

It is known that for use in signs and in advertising, adhesive, fluorescent foils are cut into letters and/or figures, emblems, logos and the like, which for example are stuck to a window pane or to a corresponding pane or panel made of glass, Plexiglas or a similar translucent material that forms a carrier for signs or advertising.

In order to impart the desired, glowing, neon-like effect to the sign or advertisement, it must be illuminated by a so-called non-visible or black light.

An adhesive, fluorescent foil with a translucent layer, which is impermeable or substantially impermeable for UV radiation, is disclosed in PCT International Publication WO-A-93/01581.

A disadvantage in the use of such adhesive, fluorescent foils in the form of cut-to-size letters, figures, emblems, logos and the like, in signs or in advertising is that merely letter features, logos and uniform color areas can be highlighted, and photographic reproductions and pictures in general cannot be depicted in color gradations and transitions. Furthermore, it is disadvantageous that numerous foil characters or patterns must be fabricated and cut in complex individual steps and the individual, monochrome foil patterns must be positioned and glued by hand within the scope of the actual formation of the sign or advertising surface.

A method is known from United States Patent 4,652,464, for printing art or advertising graphics using visible and/or non-visible, fluorescent dyestuffs and non-fluorescent dyestuffs in multiple print series of colors, each print series being implemented with one predetermined print pattern. Art and advertising graphics are produced in the printing process with the property of depicting an object with a smooth transition under distinctly different lighting conditions when the object is observed under illuminations which vary between daylight or incandescent light up to UV light.

In this method visible and/or non-visible, fluorescent dyestuffs are used during the printing process, which are applied to previously selected areas of the picture in a predetermined pattern, in order to obtain the desired colors under normal light or daylight and in order to amalgamate these fluorescent dyestuffs with the non-fluorescent dyestuffs under UV light, so that the fluorescent dyestuffs are blended or concealed under normal light.

The relative ratio and the colors and different color tones of the non-fluorescent dyestuffs and of the visible and non-visible, fluorescent dyestuffs are selected in advance, in order to achieve a gradual, fine transition on the picture when it is observed under light conditions which alternate between daylight and UV light, or in order to blend or shade the effect, or in order to reduce the intensity of the fluorescent dyestuffs in specific areas so as to achieve a more natural and gentler effect under UV light.

The disadvantage of the method according to United States Patent 4,652,464 is that the printing process must be modified in a complex manner in order to include the application in addition of fluorescent dyestuffs. Also, a printing process is required which is structured in many printing steps with the application of a multiplicity of specific fluorescent dyestuffs and, furthermore, predetermined areas with gradations both of the normal colors and also of the non-visible, fluorescent dyestuffs must be printed, in order to examine the desired effect of not impairing the fluorescent dyestuffs, which are applied to the picture, by the normal daylight dyestuff patterns.

A method for producing surfaces which are luminous at night is known from German Patent Reference DE-A1-196 20 090, in which a wire printer method with luminous colors red, green, blue is used so that the printed surface is luminous at night. In a second print run with translucent colors the motif depicted on the printed surface can also be made visible in daytime. The second print run serves at the same time as UV and reaction protection of the luminous colors.

SUMMARY OF THE INVENTION

One object of this invention is to provide a method that avoids the required multiplicity of printing steps and in particular the complex adjustment of the fluorescent colors in the printing process.

This object is achieved by features of this invention as described in the claims and this specification.

Particular requirements or additional steps are no longer required. Non-visible, fluorescent dyestuffs were not used in the mentioned form in the four-color and multi-color printing method. The advantages of this invention reside particularly in the fact that, instead of a multiplicity of printing steps using non-visible, fluorescent print colors and paints, the normal practice printing steps are implemented. In this connection, as also with four-color and multi-color printing with the conventional primary colors, in the lithographic composition an authentic pictorial reproduction is effected by targeted alteration of the color parameters of each individual print color and in the printing itself a fine adaptation of the perceived color is effected by an alteration of the applied color quantity. This alteration method which is known to any printer can immediately be implemented without special training or other know-how in a non-problematic manner.

DESCRIPTION OF PREFERRED EMBODIMENTS

In one embodiment of this invention, added to the print colors and/or paints are organic pigments in the range of 15% to 20%, fluorescent pigments in the range of 5% to 30% and optically active substances in the range of 0% in one kilogram of color. With these measures, a very weak luminosity of the colors is achieved.

With the measures set forth in claim 3, a weak luminosity of the colors can be achieved, and with the measures set forth in claim 4, an average luminosity of the colors can be achieved. With the measures set forth in claim 5, a strong luminosity of the colors is achieved and finally a very strong luminosity of the colors is achieved with the measures of claim 6.

This invention also extends to a single color printing method. In the case of print colors, it relates to highly colorfast print colors. Special color tones can likewise be taken into account.

By printing with fluorescent colors, the printed reproduction corresponds to the model in its color-fastness and color gradation in daylight and appears as a completely normal poster or advertising surface, though with the effect that by using the fluorescent dyestuffs even in daylight greater luminosity of the colors is already expressed, so that the reproduction strikes the observer substantially sooner than a conventional four-color print poster.

As the most distinctive advantage, the picture which is printed with fluorescent colors, the advertising graphics, advertising surface or the like, glows entirely of its own accord at night under UV light with an authentic color reproduction in comparison with the daylight effect, comparable to the brilliance of a television picture, though even more effectively in all color gradations. Three-dimensional effects are produced in the reproduction with the luminosity of a slide projection and a deep three-dimensional effect is achieved, so that the observer pays particular attention. Furthermore, the picture surface which is applied to a dark background glows of its own accord at night under UV illumination, since the UV light source, contrary to white light, throws no scattered light.

The printing process according to this invention comprises conventional methods and materials, this invention forming in particular the combination of the function of the elements.

The ratio of a percentage mixture of fluorescent pigments and non-fluorescent pigments varies on the one hand according to the individual colors or color tones, the different print stocks and, on the other hand, according to the printing methods used, for example the offset or the screen print method. The print colors can be described as follows: contentional primary colors and special color tones in combination with organic pigments, fluorescent pigments, and optically active substances, the mixture of organic pigments, fluorescent pigments and optically active substances being effected in different percentage ratios according to the printing method, according to primary colors and special tones and according to print stocks.

A preferred standard value for the ratio is given according to one embodiment of this invention in that the pigment addition to one kilogram of color in the case of organic pigments is in the range of 0.5% to 5%, in the case of fluorescent pigments in the range of 15% to 80% and in the case of optically active substances in the range of 0.5% to 1%.

This invention is described in greater detail by the following example.

Possibly, a photographically reproduced western city silhouette is to be printed, with the back of a person being reproduced in the foreground.

This motif is produced in the four-color printing method by using non-visible, fluorescent print colors and paints, the color gradation being achieved, in the printing process step of the lithographic composition, as also in the case of the conventional four-color printing method, corresponding to the model by means of alteration of the color parameters and a fine adaptation of the perceived color being effected in the print itself by means of a corresponding increase or decrease of the color quantity applied in the printing. The adjustment occurs taking into account the use of fluorescent dyestuffs, which do not correspond to the Euroscale norm, preferably by eye.

The advertising surfaces which fluoresce by means of the proposed method can be produced for any purpose, also therefore for packagings which are used with UV illumination in the gastronomic sphere.

Description of Related Art

BACKGROUND OF THE INVENTION
Field of the Invention

Method for producing printed surfaces

This
The invention relates to a method for producing printed surfaces according to the preamble of claim 1. which fluoresce under ultraviolet (UV) light.

It is known to use fluorescent dyestuffs in combination with normal dyestuffs for various effects.

Fluorescent dyestuffs are mixed with normal dyestuffs in order to make the colour color brighter in daylight. The dyestuffs which are non-visible or fluoresce under ultraviolet light (UV light) are also especially particularly used in the theatre for special effects, their dramatically fluorescent properties under UV illumination being exploited.

It is known that for use in signs and in advertising, adhesive, fluorescent foils are cut into letters and/or figures, emblems, logogrammes logos and the like, which for example are stuck to a window pane or to a corresponding pane or panel made of glass, Plexiglas or a similar translucent material that which consequently forms a carrier for signs or advertising.

In order to impart the desired, glowing, neon-like effect to the sign or advertisement, it must be illuminated by means of a so-called non-visible or black light.

An adhesive, fluorescent foil with a translucent layer, which is impermeable or substantially impermeable for UV radiation, is disclosed in WO-A-93/01581.
PCT International Publication

A disadvantage in the use of such adhesive, fluorescent foils in the form of cut-to-size letters, figures, emblems, logogrammes logos and the like, in signs or in advertising resides in the fact is that merely letter features, logos and uniform colour color areas can be highlighted, in that and photographic reproductions and pictures in general cannot however be depicted in

[colour] color gradations and transitions. Furthermore, it is disadvantageous that numerous foil characters [or] [patterns] must be fabricated and cut in complex individual steps and the individual, monochrome foil patterns must be positioned and glued by hand within the scope of the actual formation of the sign or advertising surface.

A method is known from [US-A-4 652 464] United States Patent 4,652,464, for printing art or advertising graphics using visible and/or non-visible, fluorescent dyestuffs and non-fluorescent dyestuffs in multiple print series of [colours] colors, each print series being implemented with one predetermined print pattern. Art and advertising graphics are [thereby] produced in the printing process with the property of depicting an object with a smooth transition under distinctly different lighting conditions when the object is observed under illuminations which vary between daylight or incandescent light up to UV light.

In this method visible and/or non-visible, fluorescent dyestuffs are used during the printing process, which are applied to [the] previously selected areas of the picture in a predetermined pattern, in order to obtain the desired [colours] colors under normal light or daylight and in order to amalgamate these fluorescent dyestuffs with the non-fluorescent dyestuffs under UV light, so that the fluorescent dyestuffs are blended or concealed under normal light.

The relative ratio and the [colours] colors and different [colour] color tones of the non-fluorescent dyestuffs and of the visible and non-visible, fluorescent dyestuffs are [hereby] selected in advance, in order to achieve a gradual, fine transition on the picture when it is observed under light conditions which alternate between daylight and UV light, or in order to blend or shade the effect, or in order to reduce the intensity of the fluorescent dyestuffs in specific areas so as to achieve a more natural and gentler effect under UV light.

The disadvantage of the method according to [US-A-4 652 464] United States Patent 4,652,464 is resides in the fact that the printing process must be modified in a complex manner in order to include the application in addition of fluorescent dyestuffs and that a printing process is required which is structured in many printing steps with the application of a multiplicity of specific fluorescent dyestuffs and, furthermore, predetermined areas with gradations both of the normal colours and also of the non-visible, fluorescent dyestuffs must be printed, in order thus to examine the desired effect of not impairing the fluorescent dyestuffs, which are applied to the picture, by the normal daylight dyestuff patterns. Also, a

Finally, a method for producing surfaces which are luminous at night is known from DE-A1-196 20 090, German Patent Reference in which a wire printer method with luminous colours, red, green, blue is used so that the printed surface is luminous at night. In a second print run with translucent colours the motif depicted on the printed surface can also be made visible in daytime. The second print run thereby serves at the same time as UV and reaction protection of the luminous colours.

SUMMARY OF THE INVENTION

The object underlying the present invention is to avoid the hitherto required multiplicity of printing steps and in particular the complex adjustment of the fluorescent colours in the printing process. One object of this invention is to provide a method that avoids

This object is achieved by means of the features mentioned in claim 1. of this invention as described in the claims and this specification

Particular requirements or additional steps are hence no longer required. Hitherto, non-visible, fluorescent dyestuffs were not used in the mentioned form in the four-color and multi-colour printing method. The advantages of the invention reside particularly in the fact that, instead of a multiplicity of printing steps using non-visible, fluorescent print colours and paints, the normal practice printing steps are implemented and, in this connection, as also with four-color and multi-colour printing with the conventional primary colours, in the lithographic composition an

authentic pictorial reproduction is effected by means of targeted alteration of the colour parameters of each individual print colour and in the printing itself a fine adaptation of the perceived colour is effected by means of an alteration of the applied colour quantity. This alteration method which is known to any printer can immediately be implemented without special training or other know-how in a non-problematic manner.

Further expedient and advantageous embodiments of the invention emerge from the sub-claims.

DESCRIPTION OF PREFERRED EMBODIMENTS

In one embodiment, an expedient development of this invention provides that there are added to the print colours and/or paints organic pigments in the range of 15% to 20%, fluorescent pigments in the range of 5% to 30% and optically active substances in the range of 0% in one kilogram of colour. By means of these measures, a very weak luminosity of the colours is achieved.

With the measures set forth in claim 3, a weak luminosity of the colours can be achieved, whilst by means of the measures set forth in claim 4, an average luminosity of the colours can be achieved. By means of the measures set forth in claim 5, a strong luminosity of the colours is achieved and finally a very strong luminosity of the colours is achieved by means of the measures of claim 6.

This invention also extends to a single colour printing method. In the case of print colours, it relates to highly colourfast print colours. Special colour tones can likewise be taken into account.

By printing with fluorescent colours, it is achieved that the printed reproduction corresponds to the model in its colourfastness and colour gradation in daylight and appears as a completely normal poster or advertising surface, though with the effect that by using the fluorescent dyestuffs even in daylight greater luminosity of the colours is already

expressed, so that the reproduction strikes the observer substantially sooner than a conventional four colour print poster.
four-color

As the most distinctive advantage, it emerges that the picture which is printed with fluorescent colours, the advertising graphics, advertising surface or the like, glows entirely of its own accord at night under UV light with an authentic colour color reproduction in comparison with the daylight effect, comparable to the brilliance of a television picture, though even more effectively in all colour color gradations, ~~such that~~ three Three dimensional effects are produced in the reproduction with the luminosity of a slide projection and a deep three-dimensional effect is achieved, so that it is achieved that the observer pays particular attention. Furthermore, the picture surface which is applied to a dark background glows of its own accord at night under UV illumination, since the UV light source, contrary to white light, throws no scattered light.

The printing process according to the present this invention comprises conventional methods and materials, the this invention constituting forming in particular the combination of the function of the elements.

The ratio of a percentage mixture of fluorescent pigments and non-fluorescent pigments varies on the one hand according to the individual colors colours or colour color tones, the different print stocks and, on the other hand, according to the printing methods used, for example the offset or the screen print method. The print colours colors can be described as follows: conventional primary colors colours and special colour color tones in combination with organic pigments, fluorescent pigments, and optically active substances, the mixture of organic pigments, fluorescent pigments and optically active substances being effected in different percentage ratios according to the printing method, according to primary colours colors and special tones and according to print stocks.

A preferred standard value for the ratio is given according to one embodiment of the invention in that the pigment addition to one kilogram of colour in the case of organic pigments is in the range of 0.5% to 5%, in the case of fluorescent pigments in the range of 15% to 80% and in the case of optically active substances in the range of 0.5% to 1%.

The invention is described in greater detail by means of the following example.

Possibly a photographically reproduced western city silhouette is to be printed, the back of a person being supposed to be reproduced in the foreground.

This motif is produced in the four colour printing method by using non-visible, fluorescent print colours and paints, the colour gradation being achieved, in the printing process step of the lithographic composition, as also in the case of the conventional four colour printing method, corresponding to the model by means of alteration of the colour parameters and a fine adaptation of the perceived colour being effected in the print itself by means of a corresponding increase or decrease of the colour quantity applied in the printing. The adjustment occurs taking into account the use of fluorescent dyestuffs, which do not correspond to the Euroscale norm, preferably by eye.

The advertising surfaces which fluoresce by means of the proposed method can be produced for any purpose, also therefore for packagings which are used with UV illumination in the gastronomic sphere.

Method for producing printed surfaces

The invention relates to a method for producing printed surfaces according to the preamble of claim 1.

It is known to use fluorescent dyestuffs in combination with normal dyestuffs for various effects.

Fluorescent dyestuffs are mixed with normal dyestuffs in order to make the colour brighter in daylight. The dyestuffs which are non-visible or fluoresce under ultraviolet light (UV light) are also especially used in the theatre for special effects, their dramatically fluorescent properties under UV illumination being exploited.

It is known that for use in signs and in advertising, adhesive, fluorescent foils are cut into letters and/or figures, emblems, logogrammes and the like which for example are stuck to a window pane or to a corresponding pane or panel made of glass, Plexiglas or a similar translucent material which consequently forms a carrier for signs or advertising.

In order to impart the desired, glowing, neon-like effect to the sign or advertisement, it must be illuminated by means of a so-called non-visible or black light.

An adhesive, fluorescent foil with a translucent layer, which is impermeable or substantially impermeable for UV radiation, is disclosed in WO-A-93/01581.

A disadvantage in the use of such adhesive, fluorescent foils in the form of cut-to-size letters, figures, emblems, logogrammes and the like in signs or in advertising resides in the fact that merely letter features, logos and uniform colour areas can be highlighted, in that photographic reproductions and pictures in general cannot however be depicted in

colour gradations and transitions. Furthermore, it is disadvantageous that numerous foil characters (patterns) must be fabricated and cut in complex individual steps and the individual, monochrome foil patterns must be positioned and glued by hand within the scope of the actual formation of the sign or advertising surface.

A method is known from US-A-4 652 464 for printing art or advertising graphics using visible and/or non-visible, fluorescent dyestuffs and non-fluorescent dyestuffs in multiple print series of colours, each print series being implemented with one predetermined print pattern. Art and advertising graphics are thereby produced in the printing process with the property of depicting an object with a smooth transition under distinctly different lighting conditions when the object is observed under illuminations which vary between daylight or incandescent light up to UV light.

In this method visible and/or non-visible, fluorescent dyestuffs are used during the printing process, which are applied to the previously selected areas of the picture in a predetermined pattern in order to obtain the desired colours under normal light or daylight and in order to amalgamate these fluorescent dyestuffs with the non-fluorescent dyestuffs under UV light, so that the fluorescent dyestuffs are blended or concealed under normal light.

The relative ratio and the colours and different colour tones of the non-fluorescent dyestuffs and of the visible and non-visible, fluorescent dyestuffs are hereby selected in advance, in order to achieve a gradual, fine transition on the picture when it is observed under light conditions which alternate between daylight and UV light or in order to blend or shade the effect or in order to reduce the intensity of the fluorescent dyestuffs in specific areas so as to achieve a more natural and gentler effect under UV light.

The disadvantage of the method according to US-A-4 652 464 resides in the fact that the printing process must be modified in a complex manner in order to include the application in addition of fluorescent dyestuffs, and that a printing process is required which is structured in many printing steps with the application of a multiplicity of specific fluorescent dyestuffs and, furthermore, predetermined areas with gradations both of the normal colours and also of the non-visible, fluorescent dyestuffs must be printed, in order thus to examine the desired effect of not impairing the fluorescent dyestuffs, which are applied to the picture, by the normal daylight dyestuff patterns.

Finally, a method for producing surfaces which are luminous at night is known from DE-A1-196 20 090, in which a wire printer method with luminous colours red, green, blue is used so that the printed surface is luminous at night. In a second print run with translucent colours the motif depicted on the printed surface can also be made visible in daytime. The second print run thereby serves at the same time as UV and reaction protection of the luminous colours.

The object underlying the present invention is to avoid the hitherto required multiplicity of printing steps and in particular the complex adjustment of the fluorescent colours in the printing process.

This object is achieved by means of the features mentioned in claim 1.

Particular requirements or additional steps are hence no longer required. Hitherto, non-visible, fluorescent dyestuffs were not used in the mentioned form in the four- and multi-colour printing method. The advantages of the invention reside particularly in the fact that, instead of a multiplicity of printing steps using non-visible, fluorescent print colours and paints, the normal practice printing steps are implemented and, in this connection as also with four- and multi-colour printing with the conventional primary colours, in the lithographic composition an

authentic pictorial reproduction is effected by means of targeted alteration of the colour parameters of each individual print colour and in the printing itself a fine adaptation of the perceived colour is effected by means of an alteration of the applied colour quantity. This alteration method which is known to any printer can immediately be implemented without special training or other know-how in a non-problematic manner.

Further expedient and advantageous embodiments of the invention emerge from the sub-claims.

An expedient development of the invention provides that there are added to the print colours and/or paints organic pigments in the range of 15% to 20%, fluorescent pigments in the range of 5% to 30% and optically active substances in the range of 0% in one kilogram of colour. By means of these measures, a very weak luminosity of the colours is achieved.

By means of the measures of claim 3, a weak luminosity of the colours can be achieved, whilst by means of the measures of claim 4, an average luminosity of the colours can be achieved. By means of the measures of claim 5, a strong luminosity of the colours is achieved and finally a very strong luminosity of the colours is achieved by means of the measures of claim 6.

The invention also extends to a single colour printing method. In the case of print colours it relates to highly colourfast print colours. Special colour tones can likewise be taken into account.

By printing with fluorescent colours, it is achieved that the printed reproduction corresponds to the model in its colourfastness and colour gradation in daylight and appears as a completely normal poster or advertising surface, though with the effect that by using the fluorescent dyestuffs even in daylight greater luminosity of the colours is already

expressed, so that the reproduction strikes the observer substantially sooner than a conventional four colour print poster.

As the most distinctive advantage, it emerges that the picture which is printed with fluorescent colours, the advertising graphics, advertising surface or the like, glows entirely of its own accord at night under UV light with an authentic colour reproduction in comparison with the daylight effect, comparable to the brilliance of a television picture, though even more effectively in all colour gradations such that three dimensional effects are produced in the reproduction with the luminosity of a slide projection and a deep three-dimensional effect is achieved, so that it is achieved that the observer pays particular attention. Furthermore, the picture surface which is applied to a dark background glows of its own accord at night under UV illumination, since the UV light source, contrary to white light, throws no scattered light.

The printing process according to the present invention comprises conventional methods and materials, the invention constituting in particular the combination of the function of the elements.

The ratio of a percentage mixture of fluorescent pigments and non-fluorescent pigments varies on the one hand according to the individual colours or colour tones, the different print stocks and, on the other hand, according to the printing methods used, for example the offset or the screen print method. The print colours can be described as follows: conventional primary colours and special colour tones in combination with organic pigments, fluorescent pigments, and optically active substances, the mixture of organic pigments, fluorescent pigments and optically active substances being effected in different percentage ratios according to the printing method, according to primary colours and special tones and according to print stocks.

A preferred standard value for the ratio is given according to one embodiment of the invention in that the pigment addition to one kilogram of colour in the case of organic pigments is in the range of 0.5% to 5%, in the case of fluorescent pigments in the range of 15% to 80% and in the case of optically active substances in the range of 0.5% to 1%.

The invention is described in greater detail by means of the following example.

Possibly a photographically reproduced western city silhouette is to be printed, the back of a person being supposed to be reproduced in the foreground.

This motif is produced in the four colour printing method by using non-visible, fluorescent print colours and paints, the colour gradation being achieved, in the printing process step of the lithographic composition, as also in the case of the conventional four colour printing method, corresponding to the model by means of alteration of the colour parameters and a fine adaptation of the perceived colour being effected in the print itself by means of a corresponding increase or decrease of the colour quantity applied in the printing. The adjustment occurs taking into account the use of fluorescent dyestuffs, which do not correspond to the Euroscale norm, preferably by eye.

The advertising surfaces which fluoresce by means of the proposed method can be produced for any purpose, also therefore for packagings which are used with UV illumination in the gastronomic sphere.

Patent Claims

1. Method for producing printed surfaces which fluoresce under UV illumination by using print colours and/or paints with pigments which are non-visible in normal light and are visible in UV light, characterised by
a conventional one or four colour printing, preferably four colour printing method, in which the fluorescent pigments of the print colours, in particular yellow, blue (cyan) and red (magenta) and special colour tones are at a defined ratio to the non-fluorescent pigments of the print colours.

2. Method according to claim 1,
characterised in that
organic pigments are added to the print colours and/or paints in the range of 15% to 20%, fluorescent pigments in the range of 5% to 30% and optically active substances in the range of 0% in one kilogram of colour.

3. Method according to claim 1,
characterised in that,
in the print colours, organic pigments are added in the range of 5% to 15%, fluorescent pigments in the range of 10% to 50% and optically active substances in the range of 0.1% to 0.5% in one kilogram of colour.

4. Method according to claim 1,
characterised in that
organic pigments are added to the print colours and/or paints in the range of 0.5% to 5%, fluorescent pigments in the range of 15% to 80% and optically active substances in the range of 0.5% to 1% in one kilogram of colour.

5. Method according to claim 1,
characterised in that
organic pigments are added to the print colours and/or paints in the range of 0.5% to 3%, fluorescent pigments in the range of 20% to 85% and optically active substances in the range of 1% to 2% in one kilogram of colour.

6. Method according to claim 1,
characterised in that
organic pigments are added to the print colours and/or paints in the range of 0.5% to 1%, fluorescent pigments in the range of 25% to 90% and optically active substances in the range of 2% to 5% in one kilogram of colour.

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum
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Veröffentlicht:
— *Mit internationalem Recherchenbericht.*

Zur Erklärung der Zweibuchstaben-Codes, und der anderen Abkürzungen wird auf die Erklärungen ("Guidance Notes on Codes and Abbreviations") am Anfang jeder regulären Ausgabe der PCT-Gazette verwiesen.

(54) Title: METHOD FOR THE PRODUCTION OF PRINTED SURFACES

(54) Bezeichnung: VERFAHREN ZUR HERSTELLUNG VON BEDRUCKTEN FLÄCHEN

(57) Abstract: A method for the production of printed surfaces which are fluorescent under UV light uses either a single or four colour print process in which the base colours of yellow, blue and red and special colour tones contain fluorescent pigments, which are not visible under normal light but visible under UV light, in a fixed ratio to the pigments which are colourfast under high intensity light. The inventive method can be carried out easily to apply and the numerous printing steps previously required are avoided. The greatest advantage is the fact that pictures printed with fluorescent colours appear to give a complete three-dimensional effect at night under UV light with an authentic stepless colour reproduction of all tones when compared to the daylight effect.

(57) Zusammenfassung: Ein Verfahren zur Herstellung bedruckter, unter UV-Beleuchtung fluoreszierender Flächen verwendet ein Ein- bzw. Vierfarbdruckverfahren, wobei die Grundfarben Gelb, Blau, Rot und Sonderfarbtöne fluoreszierende Pigmente enthalten, die bei Normallicht unsichtbar und unter UV-Licht sichtbar sind und die fluoreszierenden Pigmente zu den nicht fluoreszierenden Pigmenten der hochlichtechten Druckfarben in einem festen Verhältnis stehen. Das Verfahren ist einfach anwendbar, und die bisher nötigen, zahlreichen Druckschritte werden vermieden. Am vorteilhaftesten ist, dass das mit fluoreszierenden Farben gedruckte Bild bei Nacht unter UV-Licht bei authentischer Farbwiedergabe im Verhältnis zur Tageslichtwirkung in allen Farbabstufungen stufenlos, dreidimensional wirkend insgesamt aus sich heraus leuchtet.

WO 01/21415 A1

Declaration and Power of Attorney For Patent Application
Erklärung Für Patentanmeldungen Mit Vollmacht
German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

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VERFAHREN ZUR HERSTELLUNG VON BEDRUCKTEN FLÄCHEN

deren Beschreibung

(zutreffendes ankreuzen)
■ hier beigetfügt ist.

☐ am_____ unter der

Anmeldungsseriennummer_____

eingereicht wurde und am _____ abgeändert wurde (falls tatsächlich abgeändert).

Ich bestätige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) von Wichtigkeit sind, an.

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird.

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

METHOD FOR THE PRODUCTION OF PRINTED SURFACES

the specification of which

(check one)
■ is attached hereto.

☐ was filed on _____ as

Application Serial No._____

and was amended on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

German Language Declaration

Prior foreign applications
Priorität beansprucht

			Priority Claimed	
199 45 815.4 (Number) (Nummer)	Germany (Country) (Land)	17 September 1999 (Day/Month/Year Filed) (Tag/Monat/Jahr eingereicht)	■ Yes Ja	❐ No Nein
PCT/EP00/08043 (Number) (Nummer)	PCT (Country) (Land)	17 August 2000 (Day/Month/Year Filed) (Tag/Monat/Jahr eingereicht)	■ Yes Ja	❐ No Nein
(Number) (Nummer)	(Country) (Land)	(Day/Month/Year Filed) (Tag/Monat/Jahr eingereicht)	❐ Yes Ja	❐ No Nein

Ich beanspruche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 112 offenbart ist, erkenne ich gemäss Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT Internationale Anmeldedatum dieser Anmeldung bekannt geworden sind.

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

None (Application Serial No.) (Anmeldeseriennummer)	None (Filing Date) (Anmeldedatum)	None (Status) (patentiert, anhangig aufgegeben)	None (Status) (patented, pending, abandoned)
None (Application Serial No.) (Anmeldeseriennummer)	None (Filing Date) (Anmeldedatum)	None (Status) (patentiert, anhangig aufgegeben)	None (Status) (patented, pending, abandoned)

Ich erkläre hiermit, dass alle von mir in der vorliegenden Erklärung gemachten Angaben nach meinem besten Wissen und Gewissen der vollen Wahrheit entsprechen, und dass ich diese eidesstattliche Erklärung in Kenntnis dessen abgebe, dass wissentlich und vorsätzlich falsche Angaben gemäss Paragraph 1001, Absatz 18 der Zivilprozessordnung der Vereinigten Staaten von Amerika mit Geldstrafe belegt und/oder Gefängnis bestraft werden koennen, und dass derartig wissentlich und vorsätzlich falsche Angaben die Gültigkeit der vorliegenden Patentanmeldung oder eines darauf erteilten Patentes gefährden können.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

German Language Declaration

VERTRETUNGSVOLLMACHT: Als benannter Erfinder beauftrage ich hiermit den nachstehend benannten Patentanwalt (oder die nachstehend benannten Patentanwälte) und/oder Patent-Agenten mit der Verfolgung der vorliegenden Patentanmeldung sowie mit der Abwicklung aller damit verbundenen Geschäfte vor dem Patent-und Warenzeichenamt: *(Name und Registrationsnummer antühren)*

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BEVOLLMÄCHTIGUNG DER ANWÄLTE, AUFTRÄGE UND INSTRUKTIONEN VOM VERTRETER DES ANMELDERS ENTGEGENZUNEHMEN UND AUSZUFÜHREN

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POWER OF ATTORNEY: As a named inventor, I hereby appoint the following Attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. *(list name and registration number)*

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AUTHORIZATION OF ATTORNEYS TO ACCEPT AND FOLLOW INSTRUCTIONS FROM REPRESENTATIVE

The undersigned to this declaration and power of attorney hereby authorizes the U.S. attorneys named above to accept and follow instructions from
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Full name of sole or first inventor:

Ingo BECKMANN
Inventor's signature Date
14.03.2002
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Unterschrift des Erfinders — Datum

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Inventor's signature — Date

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Inventor's signature — Date

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